

polymerizable vinyl monomer and a copolymer of allyl (meth)acrylate, (meth)acrylic acid and if desired, other addition-polymerizable vinyl monomer are particularly preferably used. In addition, polyvinyl pyrrolidone and polyethylene oxide are useful as the water-soluble organic polymer. In order to increase strength of a cured film, an alcohol-soluble polyamide and a polyether of 2,2-bis-(4-hydroxyphenyl)propane with epichlorohydrin are also useful.

Polyurethane resins as described in JP-B-7-120040, JP-B-7-120041, JP-B-7-120042, JP-B-8-12424, JP-A-63-287944, JP-A-63-287947, JP-A-1-271741 and JP-A-11-352691 are also useful for use in the present invention.

By introducing a radical reactive group into the side chain of the organic polymer, the strength of a cured film formed therefrom can be increased. For example, a group having an ethylenically unsaturated bond, an amino group or an epoxy group is illustrated as an addition-polymerizable functional group, a mercapto group, a thiol group, a halogen atom, a triazine structure or an onium salt structure is illustrated as a functional group capable of forming a radical upon irradiation, and a carboxy group or an imido group is illustrated as a polar group. Of the addition-polymerizable functional groups, an ethylenically unsaturated group such as an acryl group, a methacryl group, an allyl group or a stylyl group is

particularly preferred. A functional group selected from an amino group, a hydroxy group, a phosphonic acid group, a phosphoric acid group, a carbamoyl group, an isocyanato group, a ureido group, a ureylene group, a sulfonic acid group and an ammonio group is also useful.

In order to maintain the developing property of the composition for the photosensitive layer, it is preferred that the polymer binder for use in the present invention has an appropriate molecular weight and acid value. Specifically, the polymer binder having a weight average molecular weight of from 5,000 to 300,000 and an acid value of from 20 to 200 is effectively used.

The organic polymer binder can be mixed in an appropriate amount in the entire composition for the photosensitive layer. When the amount of polymer binder exceeds 90% by weight, it may be difficult to obtain sufficient strength of image formed. The amount is preferably from 10 to 90% by weight, more preferably from 30 to 80% by weight of the composition for the photosensitive layer. It is preferred that a ratio of the photo-polymerizable ethylenically unsaturated compound to the organic polymer binder is in a range of from 1/9 to 9/1 by weight. The range is more preferably from 2/8 to 8/2 by weight, and still more preferably from 3/7 to 7/3 by weight.

It is preferred to add a small amount of a thermal polymerization inhibitor in addition to the fundamental components described above to the photosensitive composition for the photosensitive layer in order to prevent undesirable thermal polymerization of the photo-polymerizable ethylenically unsaturated compound during the production and storage of the photosensitive composition in the present invention. Suitable examples of the thermal polymerization inhibitor include hydroquinone, p-methoxyphenol, di-tert-butyl-p-cresol, pyrogallol, tert-butylcatechol, benzoquinone, 4,4'-thiobis-(3-methyl-6-tert-butylphenol), 2,2'-methylenebis-(4-methyl-6-tert-butylphenol), N-nitrosophenylhydroxylamine primary cerium salt and N-nitrosophenylhydroxylamine aluminum salt. The amount of the thermal polymerization inhibitor added is preferably from about 0. 01 to about 5% by weight based on the solid content of photosensitive composition. Further, a higher fatty acid or a derivative thereof such as behenic acid or behenic amide may be added to the photosensitive composition and localized on the surface of the photosensitive layer during a drying process after coating in order to prevent polymerization hindrance due to oxygen, if desired. The amount of higher fatty acid or derivative thereof added is preferably from about 0. 5 to